

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-24. (Cancelled)

25. (Withdrawn) A method of mounting an anastomosis connector having a plurality of bent backwards spikes including bent tips, into a delivery tube, comprising:

bending back said spikes to point backwards along an axial direction of said connector, away from a graft mounted on said connector;

maintaining said tips in a bent configuration; and

inserting said spikes into a receptacle of said delivery tube, which receptacle maintains said tips in a bent configuration.

26. (Currently amended) An anastomotic connector, comprising:

a cylinder-like body; and

at least one set of spikes, coupled to said body by twisting joints, wherein said set of spikes are bent and oriented to form a fluid-tight connection

between a blood vessel and an opening in a sidewall of
another blood vessel.

27. (Withdrawn) A medical graft delivery system, comprising:

a tubular element for delivering a graft through a bore thereof and having a delivery end, said end being prone to distortion; and
at least one collar removably encircling said delivery end, which collar prevents said distortion, wherein said at least one collar comprises a split collar adapted to be removed from a side of said delivery system.

28. (Withdrawn) A medical graft delivery system, comprising:

a tubular element for delivering a graft through a bore thereof and having a delivery end, said end being prone to distortion; and
at least one collar removably encircling said delivery end, which collar prevents said distortion, wherein said at least one collar comprises a complete collar adapted to be removed axially from said delivery end.

29. (Withdrawn) A system according to claim 27, wherein said at least one collar is integrated with a graft guide, said guide adapted to prevent damaging contact between said graft and said delivery system, during a loading of said graft into said delivery system.

30. (Withdrawn) A method of preparing a graft for an anastomosis, comprising:

providing a graft having a lip at an opening therein; and

2 compressing said lip of said graft to form at least one thickened portion adjacent said opening.

31. (Withdrawn) A method according to claim 30, wherein said thickening is uniform around said opening.

32. (Withdrawn) A method according to claim 30, wherein said thickening is selected to achieve a size match between the lip of the graft and the lip of an opening in a target vessel.

33. (Withdrawn) A method according to claim 30, comprising transfixing said thickening with at least one spike.

34. (Withdrawn) A method according to claim 30,
wherein said spike is obliquely disposed with respect to
said graft.

35. (Withdrawn) A method according to claim 30,
wherein said thickening is maintained in shape by a
connector.

36. (Withdrawn) A method according to claim 30,
wherein compressing said lip comprises compressing using
an anastomotic connector.


37. (Withdrawn) A method according to claim 30,
wherein compressing said lip comprises compressing using
a graft compression tool.

38. (Withdrawn) A method according to claim 30,
wherein said opening is an opening in an end of said
graft.

39. (Withdrawn) A method according to any of
claims 30-38, wherein said graft is a blood vessel.

40. (Withdrawn) A method according to claim 39,
wherein said graft is a mammary artery.

41. (Withdrawn) A method according to any of claims 30-38, wherein said graft is a synthetic graft.

42. (Withdrawn) A method according to any of claims 30-38, comprising attaching said graft to a blood vessel.

43. (Withdrawn) A method according to any of claims 30-38, comprising attaching said graft to a synthetic graft.

44. (Currently amended) An anastomotic connector for attaching two blood vessels, comprising:
a cylinder-like portion defining a lumen; and
a plurality of tissue engaging portions for engaging two blood vessels to form a fluid-tight connection between an opening in a sidewall of one of said two blood vessels and the other of said two blood vessels, said plurality comprising at least one spike, wherein radial expansion of said cylinder-like portion causes said at least one spike to engage tissue.

45. (Currently amended) An anastomotic connector for attaching two blood vessels, comprising:
a cylinder-like portion defining a lumen; and

a plurality of tissue engaging portions for engaging two blood vessels to form a fluid-tight connection between an opening in a sidewall of one of said two blood vessels and the other of said two blood vessels, wherein radial expansion of said cylinder-like portion is coupled to axial contraction of said cylinder-like portion.

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46. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

47. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

48. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

49. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

50. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

51. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

52. (Previously presented) A connector according to claim 45 wherein, when axial contraction has occurred, radial expansion has occurred.

53. (Previously presented) A connector according to claim 45, wherein said radial expansion activates at least one of said tissue engaging portions.

54. (Previously presented) A connector according to claim 45, wherein at least one of said tissue engaging portions comprises at least one spike.

55. (Previously presented) A connector according to claim 44 or 54, wherein said spike is pre-stressed to lie outside of an axial profile of said cylinder-like portion.

56. (Previously presented) A connector according to claim 44 or 54, wherein said cylinder-like portion is arranged to twist, in at least one location thereon, which location is coupled to said at least one spike, whereby said twist causes said spike to extend.

57. (Previously presented) A device according to any of claims 44-54, wherein said lumen has fixed inner diameter.

58. (Previously presented) A device according to any of claims 44-54, wherein said lumen has a varying inner diameter.

59. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion comprises at least one part which is super-elastic.

60. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion comprises at least one part which comprises a temperature-triggered shape-memory material.

61. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like

portion comprises at least one part which comprises a temperature-responsive bi-material composite, which changes its geometry under the effect of small temperature changes.

62. (Previously presented) A device according to any of claims 44-54, wherein said at least one of tissue engagers comprises at least one part which is super-elastic.

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63. (Previously presented) A device according to any of claims 44-54, wherein at least one of said tissue engagers is adapted to engage a non-everted graft.

64. (Previously presented) A device according to any of claims 44-54, wherein all of said tissue engagers are adapted to engage said blood vessels inside a body.

65. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension selected relative to a wall thickness of the tissue.

66. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like

portion has an axial dimension selected relative to a wall thickness of the tissue.

67. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension selected relative to a wall thickness of the tissue.

68. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension selected relative to a wall thickness of the tissue.

69. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension and a diameter selected relative to a wall thickness and vessel diameter of the tissue.

70. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension and a diameter selected relative to a wall thickness and vessel diameter of the tissue.

71. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension and a diameter selected relative to a wall thickness and vessel diameter of the tissue.

72. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion has an axial dimension and a diameter selected relative to a wall thickness and vessel diameter of the tissue.

73. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion is arranged to expand radially.

74. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion is arranged to expand radially.

75. (Previously presented) A device according to any of claims 44-54, wherein said cylinder-like portion is arranged to expand radially.

76. (Currently amended) An anastomotic connector for attaching two blood vessels, comprising:

a cylinder-like portion defining a lumen; and
a plurality of tissue engaging portions for
engaging the blood vessels to form a fluid-tight
connection between an opening in a sidewall of one of
said two blood vessels and the other of said two blood
vessels, said plurality comprising, at least two spikes,
wherein said two spikes extend differently to engage said
tissue.

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77. (Previously presented) A connector
according to claim 76, wherein said spikes bend
differently.

78. (Previously presented) A connector
according to claim 76, wherein said spikes engage the
same blood vessel.

79. (Previously presented) A connector
according to claim 76, wherein said spikes engage
different blood vessels.

80. (Previously presented) A connector
according to claim 76, wherein said two spikes are
arranged to extend simultaneously.

81. (Previously presented) A connector according to claim 76, wherein said two spikes are arranged to extend sequentially.

82. (Previously presented) A connector according to claim 76, wherein said two spikes are arranged to extend semi-sequentially, such that there is an overlap between their motion.

E 83. (Previously presented) A connector according to claim 76, wherein said two spikes are extended by a same distortion of said cylinder-like portion.

84. (Previously presented) A connector according to claim 76, wherein said extension comprises impaling a portion of a blood vessel.

85. (Previously presented) A connector according to claim 76, wherein said extension comprises transfixing a portion of a blood vessel.

86. (Previously presented) A connector according to claim 76, wherein said extension comprises pinching a portion of a blood vessel.

87. (Currently amended) An anastomotic connector for attaching two blood vessels, comprising:
a cylinder-like portion defining a lumen; and
a plurality of tissue engaging portions for
engaging the two blood vessel to form a fluid-tight
connection between an opening in a sidewall of one of
said two blood vessels and the other of said two blood
vessels, wherein said connector has at least two
configurations, a first configuration in which said
tissue engaging portions are at a first extension state
and a second configuration wherein said tissue engaging
portions are at a second extension state, wherein said
connector exhibits a bi-modal behavior in changing from
said first configuration to said second configuration.

88. (Previously presented) A connector according to claim 87, wherein said configuration change is effected by expanding said cylinder-like portion.

89. (Previously presented) A connector according to claim 87, wherein said configuration change comprises the extension of a plurality spikes.

90. (Previously presented) A connector according to claim 87, comprising at least one bi-stable element that controls said configuration change.

91. (Previously presented) A connector according to claim 87, comprising at least one restraining element that controls said configuration change.

92. (Currently amended) An anastomotic connector for attaching two blood vessels, comprising:
a cylinder-like portion defining a lumen; and

a plurality of tissue engaging portions for engaging the two blood vessels to form a fluid-tight connection between an opening in a sidewall of one of
said two blood vessels and the other of said two blood
vessels, wherein said connector has at least two configurations, a first configuration in which said tissue engaging portions form a vessel piercing tip and a second configuration wherein said tissue engaging portions are operative to engage tissue.

93. (Previously presented) A connector according to claim 92, wherein said plurality of tissue engaging portions comprise at least one spike.

94. (Previously presented) A connector according to claim 92, wherein said plurality of tissue engaging portions are arranged at one end of said

cylinder-like portions and comprising a second plurality of tissue engaging portions adjacent the other end of said cylinder-like portion.

95. (Withdrawn) A graft kit, comprising:
a graft having at least two ends and having a side-to-end anastomotic connector attached to at least one of said two ends, wherein said anastomotic connector includes spikes for engaging a blood vessel.

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96. (Withdrawn) A kit according to claim 95, comprising a restrainer for maintaining said spikes in an unengaged configuration.

97. (Withdrawn) A framework for an endoscopic procedure, comprising:
a body which can be selectively collapsed or expanded, such that it fits through a tube used to access a surgical area;
fixation members for attaching said body to tissue at said surgical area; and
guidance members for guiding one or more tools at said area to perform said endoscopic procedure, wherein said body is operative not to be rigidly coupled to said tube while in a surgical area.

98. (Withdrawn) A framework according to claim 97, wherein said framework has a plurality of stable configurations and wherein said stable configurations are matched to a particular endoscopic procedure.

99. (Withdrawn) A framework according to claim 98, wherein said configurations are achieved by selectively inflating at least one balloon coupled to said framework.

100. (Withdrawn) A framework according to claim 97, comprising a safety line for attaching said framework to a tool which exits said body.

101. (Withdrawn) A framework according to claim 97, wherein said body is unattached to said tube.

102. (Withdrawn) A method of performing a bypass, comprising:

transvascularly providing a graft at a first location in a vascular system;

forming a hole at said location;

expelling at least most of said graft out of said hole;

navigating said graft adjacent a second hole in said vascular system;

forming a hole at said second location;
percutaneously performing a first independently patent anastomosis at said first location, which anastomosis does not occlude said vascular system at said first location; and

percutaneously performing a second independently patent anastomosis at said second location, which anastomosis does not occlude said vascular system at said second location.

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103. (Withdrawn) A method according to claim 102, wherein at least one of said first and said second anastomotic connections is a side-to-end anastomosis.

104. (Withdrawn) A method according to claim 102, wherein at least most of a graft comprises all of the graft.

105. (Withdrawn) A method according to claim 102, wherein at least most of a graft comprises all of the graft except for a lip thereof.

106. (Withdrawn) A method of performing an anastomosis, comprising:

transvascularly providing a graft at a location in a vascular system;

fixing a hole at said location;
expelling, said graft completely out of said
hole; and

transvascularly performing an independently
patent anastomosis at said location, which anastomosis
does not occlude said vascular system at said location.

107. (Withdrawn) A method according to claim
106, wherein said anastomosis is a side-to-end
anastomosis.

108. (Withdrawn) A method according to claim
106, wherein said anastomosis is performed using an
anastomotic connector and wherein said connector forms
said hole.

109. (Withdrawn) A method of anastomosis
comprising:

providing an expandable anastomotic device; and
inflating said device to simultaneously open an
anastomotic passage and perform an anastomotic
connection.

110. (Withdrawn) A method of anastomosis
attachment comprising:

inserting an anastomotic device to attach two blood vessels; and

inflating a balloon in said device if said attachment leaks.

111. (Withdrawn) A method of performing a side to end anastomosis, comprising:

providing a graft to a location on a side of a blood vessel;

forming a hole in said side blood vessel;
engaging one face of said side of the blood vessel, using an anastomosis connector to perform a first portion of the anastomosis; and

completing the anastomosis by engaging the second face of said side using the anastomosis connector.

112. (Withdrawn) A method according to claim 111, wherein said providing is from inside of said blood vessel.

113. (Withdrawn) A method according to claim 111, wherein said providing is from outside of said blood vessel.

114. (Withdrawn) A method of performing a bypass procedure, comprising:

transvascularly providing a graft at a first location in a vascular system;

expelling at least most of said graft out of a hole at said first location;

navigating an end of said graft to a second location in said vascular system;

performing an anastomosis at said second location; and

thereafter transfixing said graft to said vascular system at said first location, using an anastomotic connector.

115. (Withdrawn) A method of performing an anastomosis, comprising:

providing a graft at a location in a vascular system;

forming a hole at said location; and simultaneously expanding said hole and completing an anastomotic connection between said graft and said vascular system at said location.

116. (Withdrawn) A method according to claim 115, wherein said forming and said expanding comprises a continuous process.

117. (Withdrawn) A method according to claim
115, wherein said forming and said expanding comprises a
discrete-step process.

118. (Withdrawn) A device for sealing a hole in
a blood vessel, comprising:

a blood vessel engager comprising at least one
spike, for engaging a portion of a blood vessel adjacent
a hole in the blood vessel; and

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a body coupled to the blood vessel engager,
wherein said device has at least two configurations, a
first configuration in which said device does not seal
the hole and a second configuration to which said device
can be changed, in which second configuration said device
seals said hole.

119. (Withdrawn) A device according to claim
118, wherein said body defines a lumen therethrough.

120. (Withdrawn) A device according to claim
119, wherein said device comprises a second blood vessel
engager for engaging a second blood vessel, such that the
device can perform an anastomosis between said blood
vessel and said second blood vessel.

121. (Withdrawn) A device according to any of claims 118-120, wherein said device is arranged to form said hole in said vessel.

122. (Withdrawn) A device according to any of claims 118-120, wherein said at least one spike is arranged to engage said vessel after said hole has a final diameter, which final diameter is a diameter at which one or more tubes will be passed through said hole.

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123. (Withdrawn) A device according to any of claims 118-120, wherein said at least one spike is arranged to engage said vessel before said hole has a final diameter, which final diameter is a diameter at which one or more tubes will be passed through said hole.

124. (Withdrawn) A device according to any of claims 118-120, wherein said at least one spike is arranged to engage said vessel before said hole is formed.

125. (Withdrawn) A device according to any of claims 118-120, wherein said configuration change comprises a distortion of said body.

126. (Withdrawn) A device according to any of claims 118-120, wherein said configuration change comprises a distortion of said at least one spike.

127. (Withdrawn) A device according to claim 125, wherein said at least one spike does not distort when changing between said configurations.

128. (Withdrawn) A device according to any of claims 118-120, wherein said body comprises a ring.

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129. (Withdrawn) A device according to any of claims 118-120, wherein said body comprises a hollow cylinder.

130. (Withdrawn) A device according to any of claims 118-120, wherein said configuration change comprises plastic distortion of at least part of the device.

131. (Withdrawn) A device according to any of claims 118-120, wherein said configuration change comprises elastic distortion of at least part of the device.

132. (Withdrawn) A device according to any of claims 118-120, wherein said configuration change comprises super-elastic distortion of at least part of the device.

133. (Withdrawn) A device according to any of claims 118-120, wherein said configuration change comprises temperature-triggered shape-memory distortion of at least part of the device.

134. (Withdrawn) A device according to any of claims 118-120, wherein said device is arranged so that in said second configuration, said at least one spike urges a first portion of said blood vessel against a portion of said device, to seal said hole.

135. (Withdrawn) A device according to any of claims 118-120, wherein said device is arranged so that in said second configuration, a first portion of said device is urged against a second portion of said device, to seal said hole.

136. (Withdrawn) A device according to any of claims 118-120, wherein said device is adapted to be attached to a side of a blood vessel.

137. (Withdrawn) A device according to any of claims 118-120, wherein said device is adapted to be attached to an end of a blood vessel.

138. (Withdrawn) A method of performing an anastomosis between a graft and a target vessel, comprising:

inserting an anastomosis connector into the target vessel;

 releasing at least one forward spike of said connector;

retracting said connector such that said forward spike engages said target vessel; and completing said anastomosis.

139. (Withdrawn) A method according to claim 138, wherein completing said anastomosis comprises releasing at least one backward spike of said connector to engage said target vessel.

140. (Withdrawn) A kit for a bypass procedure, comprising:

at least one graft having anastomosis connectors mounted on two ends thereof, said graft and said connectors adapted for a peripheral bypass procedure; and

at least one guide wire attached to one end of said graft.

141. (Withdrawn) A kit according to claim 140, wherein said connectors are embedded in said ends of said graft.

142. (Withdrawn) A vascular access kit comprising:

a vascular port; and
a suture-less hole closure device adapted to fit over said port.

143. (Withdrawn) A vascular access kit comprising:

a vascular port; and
a suture-less hole closure device adapted to fit through said port.

144. (Currently amended) An anastomotic connector for attaching two blood vessels, comprising:
a plurality of clip segments for engaging the two blood vessels to form a fluid-tight connection between an opening in a sidewall of one of said two blood vessels and the other of said two blood vessels; and

a plurality of twistable resilient segments
that interconnect the clip segments.

145. (Currently amended) A connector according
to claim 144, wherein said twistable resilient segments
are bendable out of a plane defined by said clip
segments.

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146. (Currently amended) A connector according
to claim 144, wherein a resilience of said attachment
twistable resilient segments is defined to control a
diameter changing behavior of said connector.

147. (Previously presented) A connector
according to claim 144, wherein said clip segments do
penetrate target tissue when the clip closes, but do not
transfix said tissue.
